PTZ CAMERA

ZC-PT SERIES

USER MANUAL

EN

Thank you for your purchase of this product. Before operating the product, please read this instruction manual carefully to ensure proper use. Please store this instruction manual in a safe place for future reference, after you have read it.

Preface

The information provided in this manual was current when published. The company reserves the right to revise and improve its products. All specifications are subject to change without notice.

Notice

To work with the PTZ cameras, any installer or technician must have the following minimum qualifications:

- A basic knowledge of CCTV systems and components
- A basic knowledge of electrical wiring and low-voltage electrical connections
- Thorough familiarity with the contents of this manual

Important Information

Before proceeding, please read and observe all instructions and warnings in this manual. Retain this manual with the original bill of sale for future reference and, if necessary, warranty service. When unpacking your unit, check for missing or damaged items. If any item is missing, or if damage is evident, DO NOT INSTALL OR OPERATE THIS PRODUCT. Contact your dealer for assistance.

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Regulation

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Warning Notices

- **Handle the camera with care**
  Do not abuse the camera. Avoid striking, shaking, etc. The camera could be damaged by improper handing or storage.

- **Do not dismantle the camera**
  To prevent electric shock, do not remove screws or covers. There are no user serviceable parts inside. Contact a qualified service person for servicing.

- **Do not block cooling holes on the bracket**
  This camera has a cooling fan inside. Blocking the cooling holes leads to a build up of heat inside the camera and may cause malfunctions.

- **Do not operate the camera outside the specified temperature, humidity or power source rating range**
  Use the indoor camera under conditions where the temperature is between 0~ 40°C (32 ~104°F) and the outdoor camera at -50~ 50°C (-58 ~122°F) and in humidity of below 90%.

- **Do not use strong or abrasive detergents when cleaning the camera body**
  Use a dry cloth to clean the camera when dirty. If the dirt is hard to remove, use a mild detergent and wipe gently.

- **Never point the camera towards the sun**
  Do not aim the camera at bright objects. Whether the camera is in use or not, never aim it at the sun or other extremely bright objects. Otherwise, the camera may be smeared or damaged.

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1. Overview

The ZC-PT series integrated indoor PTZ camera is a new sub-compact model designed to deliver superb performance and durability combined with an intelligent and stylish housing that is suitable for any security and surveillance installation. The ZC-PT-XT series is a new weather resistant integrated outdoor PTZ camera. The ZC-PT and ZC-PT-XT series support a standard wiring concept for easy installation, and can be integrated with CCTV products, such as DVRs, control keyboards and CCTV accessories to provide a total surveillance solution.

The PTZ camera range includes four models of new generation advanced DSP colour cameras:

- ZC-PT226 model: 26× optical zoom / 12× digital magnification
- ZC-PT223 model: 23× optical zoom / 12× digital magnification
- ZC-PT222 model: 22× optical zoom / 12× digital magnification
- ZC-PT218 model: 18× optical zoom / 12× digital magnification

The PTZ camera delivers 312 x zoom ratio, enabling it to capture clear images from a long distance away. Continuous auto focus, back light compensation, auto exposure, and digital slow shutter functions ensure clear and high quality images. The key features incorporated to meet your needs include a removable IR blocking filter to 24-hour operation, additional privacy masks specially designed to prevent any intrusive monitoring in specific areas, and Wide Dynamic Range function. The Home function allows the user to specify a preset position as the 'home position' or a default function (sequence/auto-pan/cruise) as 'home function'. The PTZ camera will automatically return to its home position or function when the user does not operate any of the controls for a set period of time. The unique scheduling function also enables users to program a preset point or function (sequence/auto-pan, cruise), which is automatically triggered at a certain time.

The PTZ camera provides variable pan/tilt speeds ranging from a fast patrol of 400° per second to a slow sweep of 5° per second with 0.225° pan accuracy for fast and accurate tracking capability. The 360° continuous rotation and -10°~190° tilt travel capabilities allow an object passing directly underneath the PTZ camera to be tracked. Up to 256 preset points can be programmed for immediate surveillance of target areas, and you can also define 8 sequence, 4 auto-pan and 1 cruise route for the camera to operate automatically. An RS-485 communication port is available for remote control purposes.

The PTZ camera provides 8 alarm inputs and 2 alarm outputs, and the smart alarm management mechanism can be programmed using the OSD setup menu; certain functions (Preset/Sequence/Auto-Pan/Cruise) can be activated when an alarm is triggered.

Various built-in protocols including Ganz-PT, Ganz-S, Pelco, VCL, Philips, AD-422 (Manchester) etc., provide connectivity to other surveillance systems, allowing the integrated PTZ camera to be used in conjunction with systems from other manufacturers.

Dependability and ultra high reliability are key factors of the camera design. Every PTZ camera is assembled with meticulous care and thorough testing at our ISO 9001 certified factory. High performance, reliability, and reasonable pricing make this camera an ideal solution for even the toughest surveillance requirements.

1.1 Product Features

Precise and accurate tracking

- Auto calibration
- Home function
- Scheduling function
- Pan driver accuracy of 0.225°
- Preset speed up to 400°/sec.
- Pan & tilt proportional to zoom ratio
- 256 preset positions / 8 sequences / 4 auto-pan / 1 cruise

Low-light applications

- Removable IR cut filter (23×, 26× model)
- Minimum illumination 0.01 Lux
- Digital slow shutter
- Electronic shutter

Perfect contrast solution for high image quality

- Wide dynamic range (23x model)
- Auto white balance
- Auto gain control
- Backlight compensation
- Auto iris control

Advanced Speed Dome Functions

- Up to 24 programmable privacy zones for camera view (18×, 26× model)
- Digital Image Flip
- Image Inverse
- Built-In Multilanguage OSD

- Easy FW upgrade via ISP

Dynamic PTZ camera configuration

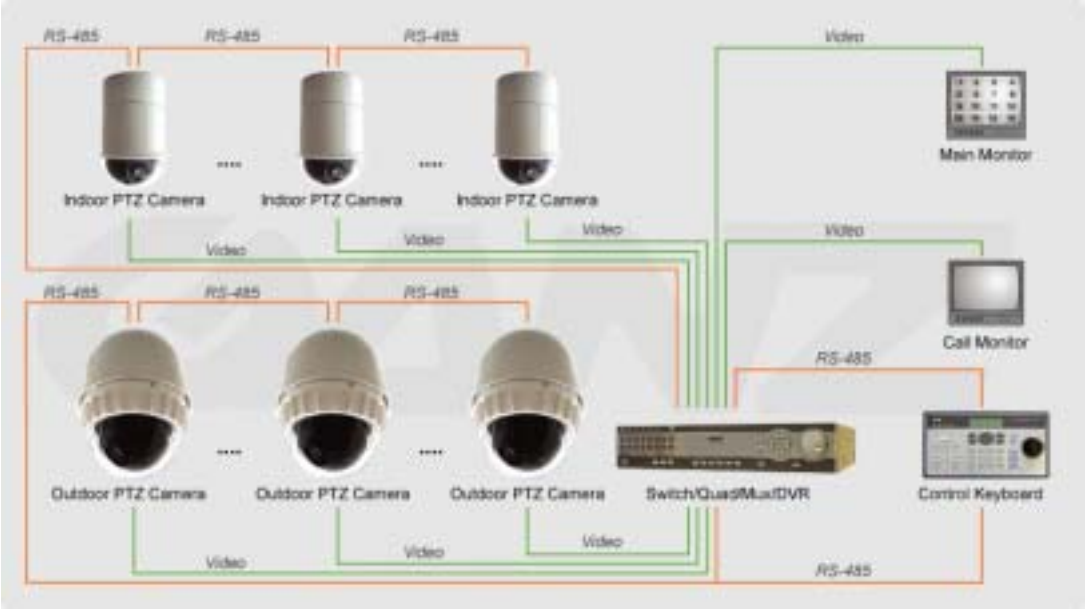
- Flexible indoor and outdoor mountings
- Compact lightweight design for easy installation
- Weather resistant housing to protect against temperature, sunlight and rain

Integrated enhanced Internet capability (optional)

- Remote monitoring mode / system configuration / software upgrades
- Incorporate active Windows applications

1.2 Product Application

Connect the PTZ camera to other devices as shown in the diagram to create a complete video surveillance solution.



NOTE: To extend the network distance up to 1.2 km (4000 feet) and to protect the connected devices, it is highly recommended to place a repeater at the mid-point. However, a repeater may be needed in the network distance less than 1.2 km if the used cables are not the CAT 5, 24-gauge cables (see 2.7 RS-485 Connector). Refer to the repeater user manual for detailed information.

2. Connecting the PTZ Camera

Please refer to the sections below for details of how to set and connect the PTZ camera. In order to control PTZ camera, a control keyboard or alternative control device is required.

2.1 Package Content

Before proceeding, please check that the box contains the items listed here. If any item is missing or has defects, DO NOT install or operate the product and contact your dealer immediately for assistance.

Indoor PTZ Camera Standard Package

Camera Body

Hard Ceiling Mount and Decoration Ring

5.4" Optical Cover

User's Manual & Quick Guide

CD

Fixing Plate

60-cm cable for Power, Video, RS-485 and Alarm

Outdoor PTZ Camera Standard Package

Camera Body & Vandal Proof Cover

60-cm cable for Power, Video, RS-485 and Alarm

User's Manual & Quick Guide

Lubricant

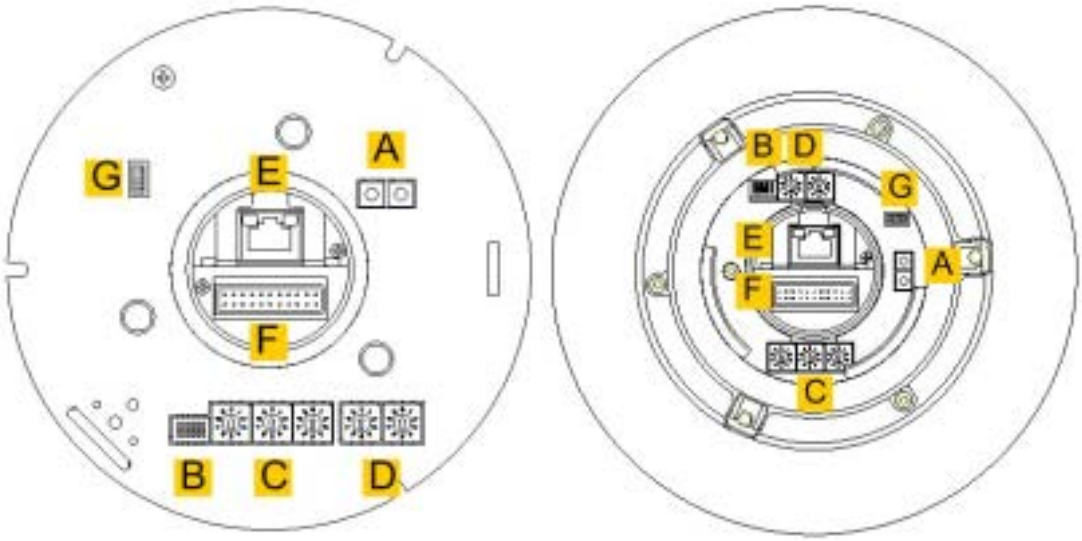
Water-proof rubber

Screws

Security screw set

2.2 Switch Definition

The PTZ camera ID and communication protocol must be configured before connecting the camera to other devices. The switches used to configure these settings are located on the bottom of the PTZ camera.

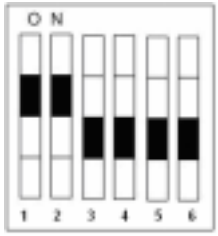


Indoor PTZ camera **Outdoor PTZ camera**

A	Reserved
B	Communication switch
C	PTZ camera ID switch
D	PTZ Camera Control Protocol
E	RJ-45 connector (for IP camera only)
F	22-pin connector
G	ISP connector (for FW upgrade)

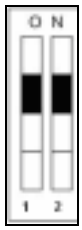
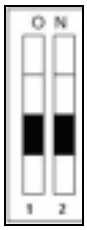
2.3 Communication Switch Setting

The table below shows the function of each pin within the communication switch.

Communication switch		
	**SW 1**	RS-485 setting
	SW 2	
	SW 3	Termination
	SW 4	Line lock
	SW 5	System initialization
	SW 6	Reserved

RS-485 is the interface that allows the PTZ camera to communicate with its control unit; the RS-485 configuration on the PTZ camera and the control unit must therefore

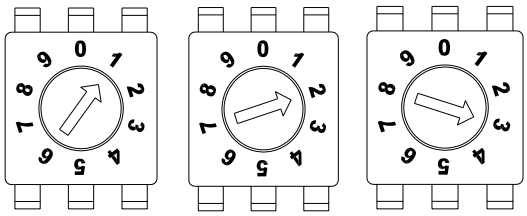
be the same. The default RS-485 setting is half-duplex. Please do not change the default setting without seeking the advice of a qualified specialist or the supplier. The SW 3 and SW 4 are used for termination and line lock adjustment respectively. The SW 5 is mainly used when users want to restore the camera to the factory default status; moreover, once firmware upgrade is carried out, users also need to reset the SW 5 afterward.

RS-485 setting	
Half-duplex	Full-duplex
	

2.4 PTZ Camera ID Setting

Use the switch to change your PTZ camera ID by turning the arrow to the desired number. For example, if the camera ID is 123, the ID switch should be set as below.

NOTE: No two cameras should be given the same ID, or communication conflict may occur.



Hundreds Tens Units

NOTE: The number "0" should be located at the top as shown in the diagram above to ensure correct switch definition.

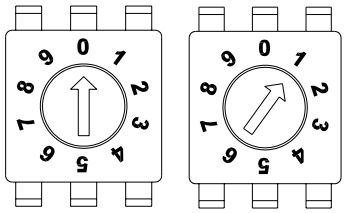
2.5 PTZ Camera Control Protocol

A protocol is a specific set of rules and procedures used for data communication. Define the protocol you are going to use based on the devices in your surveillance system. Generally, you should use a single protocol even if the devices are supplied by different manufacturers. Use the switch to set your PTZ camera control protocol and the baud rate. Refer to the table below and turn the arrow to choose a protocol for your camera.

Switch no.	Protocol	Baud rate
00	VCL	9600
01	Pelco D	2400
02	Pelco P	4800
04	Chiper	9600
05	Philips	9600
07	GANZ-PT	9600
08	AD422	4800
09	DM P	9600
11	Pelco D	4800
12	Pelco D	9600
13	Pelco P	2400
14	Pelco P	9600
16	GANZ-S	4800
17	GANZ-S	9600
18	GANZ-S	19200
19	GANZ-S	38400
21	KALATEL RS485	9600
22	KALATEL RS422	4800

*GANZ-PT is for ZC-PT series PTZ camera. GANZ-S is for ZC-S series PTZ camera.

For example, select protocol Pelco D with a baud rate of 2400, the ID switch should be set as shown below.



Tens Units

NOTE: Change the PTZ camera's control protocol only when the camera is powered off.

After changing protocol, please do the following procedure:

(1) Set SW 5(Communication switch) on.

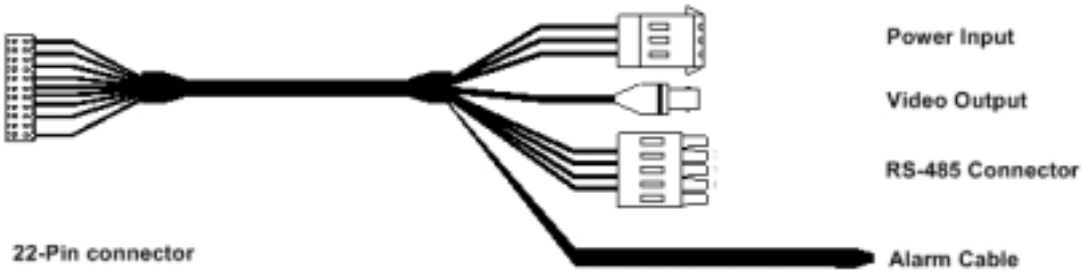
(2) Power on the camera and check the message on the screen.

(3) Power off and set SW 5(Communication switch) off.

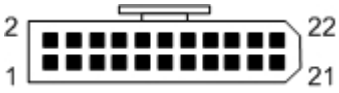
(4) Power on again.

2.6 22-Pin Connector Definition

A 50-cm data cable (as shown below) is supplied with the PTZ camera for quick installation, e.g. for demonstration or testing purposes.



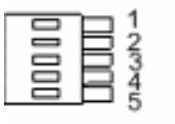
The 22-pin connector definition is listed in the table below.



Pin	Definition	Cable
1	AC24-1	20AWG
2	ALM NC	24AWG
3	AC24-2	20AWG
4	ALM NO	24AWG
5	FG	20AWG
6	ALM COM	24AWG
7	T+	24AWG
8	R-	
9	T-	
10	R+	
11	Alarm ISOG	
12	ALM-1	
13	ALM-3	
14	ALM-2	
15	ALM-4	
16	ALM-5	
17	ALM-6	
18	ALM-7	
19	ALM-8	
20	ALM GND	
21	VGND	
22	Video	

2.7 RS-485 Connector

RS-485 is the interface that the PTZ camera uses to communicate with its control unit. Connect the control keyboard to the camera via the terminal block. The recommended cables for RS-485 communication are **CAT 5** cables; the maximum cable length for wire with a gauge above 24 is 4000 feet (1219 meters). If the total cable length exceeds 4000 feet, using a repeater to amplify the signals is recommended.

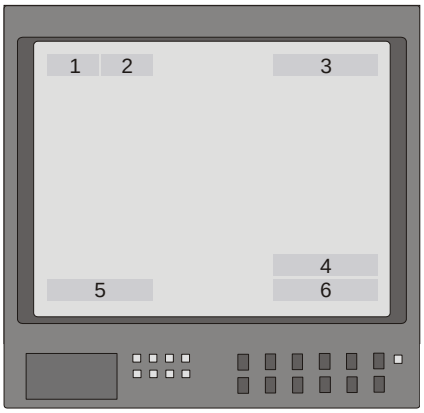


Pin	Corresponding Pins (22-Pin Connector)	Definition
1	7,10	T+, R+ (D+)
2	Reserved	
3	Reserved	
4	Reservied	
5	8,9	T-, R- (D-)

3. Operation and Configuration

3.1 OSD Display Format

The information shown on the screen is described in terms of the corresponding OSD display, its position and its function in the table below.



Position	Function	OSD display	Description
1	Focus modes	A	Auto focus mode
		M	Manual focus mode
2	Backlight	X	Back light compensation OFF
		B	Back light compensation ON
3	Alarm	ALARM	Alarm message
4	Zoom ratio	×1	Current zoom ratio (Optical zoom→Digital zoom)
5	Title	• Maximum 20 characters for each title. • 16 sets of titles are available.	
6	Camera ID	Shows the camera ID	

3.2 OSD Menu Tree

The OSD setup menu structures for the 18×/26× model and the 22×/23× model are listed separately in the section below. The star symbol indicates the factory default.

For a detailed function description, please refer to section 3.3 Configuration Menu.

3.2.1 18× / 26× Model

Item	Layer 1	Layer 2	Layer 3	Default
LANGUAGE	<ENGLISH>, <FRENCH>, <GERMAN>, <ITALIAN>, <JAPANESE>, <POLISH>, <PORTUGUESE>, <RUSSIAN>, <SPANISH>			ENGLISH
DEFAULT CAMERA	<ON>, <OFF>			ON
BACKLIGHT	<ON>, <OFF>			OFF
FOCUS	AUTO	AF MODE <NORMAL>, <INTERVAL>, <ZOOM TRIG>		NORMAL
	MANUAL	FOCUS SPEED <01>~<08>		
AE MODE	EXPODURE COMP.	<OFF>, EXPOSURE VALUE: <-10.5dB> ~ <10.5dB>		OFF
	AE MODE	AUTO		
		BRIGHT	BRIGHT VALUE <00> ~ <31>	
		SHUTTER	SHUTTER SPEED <1> ~ <1/10000> SEC.	
		IRIS	IRIS <CLOSE>, <F1.6> ~ <F28>	
		MANUAL	BRIGHT VALUE: AUTO	
			SHUTTER SPEED <1/10000> ~ <1>	
			IRIS VALUE <F1.6> ~ <F28>	
			GAIN VALUE <-3>dB ~ <28>dB	
	EXIT	YES		
WBC MODE	AUTO (Auto White Balance)			☆
	INDOOR			
	OUTDOOR			
	ATW (Auto-tracing WBC)			
	MANUAL	R GAIN <000> ~ <127>		
		B GAIN <000> ~ <127>		
SETUP MENU 1	ZOOM SPEED	<1> ~ <8>		8
	DIGITAL ZOOM	<ON>, <OFF>		ON
	SLOW SHUTTER	<ON>, <OFF>		OFF
	IMAGE INVERSE	<ON>, <OFF>		OFF
	APERTURE	<01> ~ <16>		11
	EXIT	YES		
SETUP MENU 2	FLIP	<OFF>, <M.E.>, <IMAGE>		OFF
	ANGLE ADJUSTER	MIN ANGLE<-10 ~ +10 DEG>,		0
		MAX ANGLE <080 ~ 100 DEG>		90
	SPEED BY ZOOM	<ON>, <OFF>		OFF
	AUTO CALI.	<ON>, <OFF>		OFF
	SYSTEM RESET	YES		
	EXIT	YES		
ID DISPLAY	<ON>, <OFF>			ON
TITLE DISPLAY	<ON>, <OFF>			OFF
TITLE SETTING	<01> ~ <16>			01
PRESET	PRESET SET	<001>~<256>		ENTER
	PRESET RUN	<001>~<256>		ENTER

Item	Layer 1	Layer 2	Layer 3	Default
	EXIT	YES		ENTER
SEQUENCE	SEQUENCE LINE	<1> ~ <8>		1
	SEQUENCE POINT	<01> ~ <32>		01
	PRESET POS.	<001> ~ <255>, <END>		001
	SPEED	<01> ~ <15>		01
	DWELL TIME	<000> ~ <127> SEC.		000
	RUN SEQUENCE	ENTER		
	EXIT	YES		
AUTOPAN	AUTOPAN LINE	<1> ~ <4>		1
	START POINT	<TO FIND>, <TO SAVE>		
	END POINT	<TO FIND>, <TO SAVE>		
	DIRECTION	<RIGHT>, <LEFT>		RIGHT
	SPEED	<01> ~ <04>		01
	RUN AUTOPAN	ENTER		
	EXIT	YES		
CRUISE	RECORD START	ENTER		
	RECORD END	ENTER		
	RUN CRUISE	ENTER		
	EXIT	YES		
HOME SETTING	HOME FUNCTION	<ON>, <OFF>		OFF
	SELECT MODE	<PRESET>, <SEQUENCE>, <AUTOPAN>, <CRUISE>		PRESET
	PRESET POINT	<001> ~ <256>		001
	SEQUENCE LINE	<1> ~ <8>		1
	AUTOPAN LINE	<1> ~ <4>		1
	CRUISE LINE	<1>		1
	RETURN TIME	<000> ~ <128> MIN.		000
	GO	ENTER		
	EXIT	YES		
IR FUNCTION (26× Model only)	<AUTO>, <ON>			AUTO
ALARM SETTNG	ALARM PIN	<1> ~ <8>		1
	ALARM SWITCH	<ON>, <OFF>		OFF
	ALARM TYPE	<N.O.> (Normal Open), <N.C.> (Normal Close)		N.C.
	ALARM ACTION	<PRESET>, <SEQUENCE>, <AUTOPAN>, <CRUISE>		PRESET
	PRESET POINT	<001> ~ <256>		001
	SEQUENCE LINE	<1> ~ <8>		1
	AUTOPAN LINE	<1> ~ <4>		1
	CRUISE LINE	1		1
	DWELL TIME	<001> ~ <127> Sec., <ALWAYS>		ALWAYS
	EXIT	YES		
ALARM DETECT	DETECT SWITCH	<ON>, <OFF>		OFF
	DETECT MODE	<INT FOCUS>, <FIX FOCUS>, <INT AE>, <FIX AE>		INT FOCUS
	EXIT	YES		
PRIVACY MASK	PRIVACY SWITCH	<ON>, <OFF>		OFF
	TRANSPARENCY	<ON>, <OFF>		OFF
	COLOR	<BLACK>, <LI. GRAY>, < GRAY>, <WHITE>, <RED>, <GREEN>, <BLUE>, <CYAN>, <YELLOW>, <MAGENTA>		BLACK
	SET MASK	<01> ~ <24>	H CENTER: L/R	
			V CENTER: D/U	
			H SIZE <000> ~ <080>	
			V SIZE <000> ~ <060>	
			EXIT + SAVE	
	CLEAR MASK	<01> ~ <24>		
	EXIT	YES		
TIME SETTING	TIME DISPLAY	<ON>, <OFF>		
	SET YEAR	<00> ~ <99>		
	SET MONTH	<01> ~ <12>		

Item	Layer 1	Layer 2	Layer 3	Default
	SET DAY	<00> ~ <31>		
	SET HOUR	<00> ~ <23>		
	SET MINUTE	<00> ~ <59>		
	EXIT+SAVE			
SCHEDULE	SCHEDULE SWITCH	<ON>, <OFF>		
	SCHEDULE POINT	<01> ~ <32>		01
	SCHEDULE HOUR	<00> ~ <23>		00
	SCHEDULE MINUTE	<00> ~ <59>		00
	SCHEDULE MODE	NONE	NO FUNCTION	☆
		PRESET	PRESET POINT <001> ~ <256>	
		SEQUENCE	SEQUENCE LINE <1> ~ <8>	
		AUTOPAN	AUTOPAN LINE <1> ~ <4>	
		CRUISE	CRUISE LINE <1>	
		IR FUNC.	IR FUNCTION AUTO	
	SCHEDULE RESET	YES		
	SCHEDULE EXIT	YES		
EXIT OSD	YES			

3.2.2 22× / 23× Model

Item	Layer 1	Layer 2	Layer 3	Default
LANGUAGE	<ENGLISH>, <FRENCH>, <GERMAN>, <ITALIAN>, <JAPANESE>, <POLISH>, <PORTUGUESE>, <RUSSIAN>, <SPANISH>			ENGLISH
DEFAULT CAMERA	<ON>, <OFF>			ON
BACKLIGHT	<ON>	BLC LEVEL <00> ~ <30>		OFF
	<OFF>			
FOCUS	AUTO	TUNING VALUE <1CM>, <10CM>, <30CM>, <1M>		10CM
	MANUAL	FOCUS SPEED <0> ~ <3>		
AE MODE	AUTO	IRIS OFFSET <00> ~ <15>		
	SHUTTER	SHUTTER SPEED <1/30000> ~ <1/2>		
	IRIS	<00> ~ <09>		
	AGC	<00> ~ <05>		
WBC MODE	AUTO (Auto White Balance)			☆
	MANUAL	R GAIN <00> ~ <99> B GAIN <00> ~ <99>		
SETUP MENU 1	ZOOM SPEED	<FAST>, <SLOW>		FAST
	DIGITAL ZOOM	<OFF>, <02> ~ <12>		OFF
	SLOW SHUTTER (23× Model only)	<1/2> ~ <1/60> (NTSC)		1/30
		<1/1.5> ~ <1/50> (PAL)		1/25
	IMAGE INVERSE	<ON>, <OFF>		OFF
	APERTURE	<AUTO>		☆
		<MANUAL>	H APERTURE <00> ~ <31> V APERTURE <00> ~ <31>	
	EXIT	YES		
SETUP MENU 2	FLIP	<OFF>, <M.E.>, <IMAGE>(23× Model only)		OFF
	ANGLE ADJUSTER	MIN ANGLE<-10 ~ +10 DEG>,		0
		MAX ANGLE <080 ~ 100 DEG>		90
	SPEED BY ZOOM	<ON>, <OFF>		OFF
	AUTO CALI.	<ON>, <OFF>		OFF
	SYSTEM RESET	YES		
	EXIT	YES		
ID DISPLAY	<ON>, <OFF>			ON
TITLE DISPLAY	<ON>, <OFF>			OFF

Item	Layer 1	Layer 2	Layer 3	Default
TITLE SETTING	<01> ~ <16>			01
PRESET	PRESET SET	<001>~<256>		ENTER
	PRESET RUN	<001>~<256>		ENTER
	EXIT	YES		ENTER
SEQUENCE	SEQUENCE LINE	<1> ~ <8>		1
	SEQUENCE POINT	<01> ~ <32>		01
	PRESET POS.	<001> ~ <255>, <END>		001
	SPEED	<01> ~ <15>		01
	DWELL TIME	<000> ~ <127> SEC.		000
	RUN SEQUENCE	ENTER		
	EXIT	YES		
AUTOPAN	AUTOPAN LINE	<1> ~ <4>		1
	START POINT	<TO FIND>, <TO SAVE>		
	END POINT	<TO FIND>, <TO SAVE>		
	DIRECTION	<RIGHT>, <LEFT>		RIGHT
	SPEED	<01> ~ <04>		01
	RUN AUTOPAN	ENTER		
	EXIT	YES		
CRUISE	RECORD START	ENTER		
	RECORD END	ENTER		
	RUN CRUISE	ENTER		
	EXIT	YES		
HOME SETTING	HOME FUNCTION	<ON>, <OFF>		OFF
	SELECT MODE	<PRESET>, <SEQUENCE>, <AUTOPAN>, <CRUISE>		PRESET
	PRESET POINT	<001> ~ <256>		001
	SEQUENCE LINE	<1> ~ <8>		1
	AUTOPAN LINE	<1> ~ <4>		1
	CRUISE LINE	<1>		1
	RETURN TIME	<000> ~ <128> MIN.		000
	GO	ENTER		
	EXIT	YES		
IR FUNCTION (23× Model only)	<AUTO>, <ON>	THREADHOLD <MID>, <HI>, <LOW> IR COLOR <B/W>, <COLOR> EXIT <YES>		AUTO
ALARM SETTNG	ALARM PIN	<1> ~ <8>		1
	ALARM SWITCH	<ON>, <OFF>		OFF
	ALARM TYPE	<N.O.> (Normal Open), <N.C.> (Normal Close)		N.C.
	ALARM ACTION	<PRESET>, <SEQUENCE>, <AUTOPAN>, <CRUISE>		PRESET
	PRESET POINT	<001> ~ <256>		001
	SEQUENCE LINE	<1> ~ <8>		1
	AUTOPAN LINE	<1> ~ <4>		1
	CRUISE LINE	1		1
	DWELL TIME	<001> ~ <127> Sec., <ALWAYS>		ALWAYS
	EXIT	YES		
WDR FUNCTION (23× Model only)	<ON>	RATIO LEVEL <000> ~ <128> SHUTTER SPEED <000> ~ <128> IRIS OFFSET <000> ~ <128> EXIT <YES>		
	<OFF>			☆
PRIVACY MASK (23× Model only)	PRIVACY SWITCH	<ON>, <OFF>		OFF
	MASK SHADE	<GRAY>, <WHITE>, <BLACK>		BLACK
	SET MASK	<01> ~ <08>	H CENTER <000> ~ <255>	
			V CENTER <000> ~ <255>	
			H SIZE <000> ~ <127>	
			V SIZE <000> ~ <127>	
			EXIT + SAVE	

Item	Layer 1	Layer 2	Layer 3	Default
	CLEAR MASK	<01> ~ <08>, <RESET>		01
	MASK DISPLAY	<FIRST>, <LAST>		FIRST
	EXIT	YES		
TIME SETTING	TIME DISPLAY	<ON>, <OFF>		
	SET YEAR	<00> ~ <99>		
	SET MONTH	<01> ~ <12>		
	SET DAY	<00> ~ <31>		
	SET HOUR	<00> ~ <23>		
	SET MINUTE	<00> ~ <59>		
	EXIT+SAVE			
SCHEDULE	SCHEDULE SWITCH	<ON>, <OFF>		
	SCHEDULE POINT	<01> ~ <32>		01
	SCHEDULE HOUR	<00> ~ <23>		00
	SCHEDULE MINUTE	<00> ~ <59>		00
	SCHEDULE MODE	NONE	NO FUNCTION	☆
		PRESET	PRESET POINT <001> ~ <256>	
		SEQUENCE	SEQUENCE LINE <1> ~ <8>	
		AUTOPAN	AUTOPAN LINE <1> ~ <4>	
		CRUISE	CRUISE LINE <1>	
		IR FUNC.	IR FUNCTION AUTO	
	SCHEDULE RESET	YES		
	SCHEDULE EXIT	YES		
EXIT OSD	YES			

3.3 Configuration Menu

The detailed functions and parameter settings for your PTZ camera can be set in the OSD (On Screen Display) menu using a control unit, such as a control keyboard (ZCA-SC201). The functions in the OSD menu on the 18×, 22×, 23× and 26× models are described in the following sections.

18× Model

MAIN PAGE 2	
ID DISPLAY	ON
TITLE DISPLAY	OFF
TITLE SETTING	01
PRESET	ENTER
SEQUENCE	ENTER
AUTOPAN	ENTER
CRUISE	ENTER
HOME SETTING	ENTER

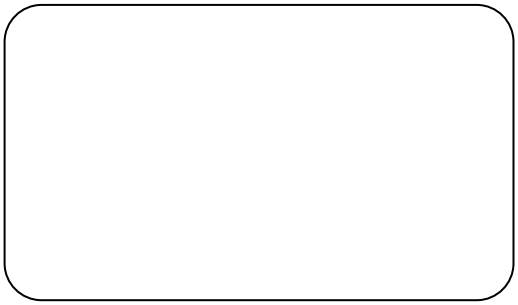
MAIN PAGE 3	
IR FUNCTION	NONE
ALARM SETTING	ENTER
ALARM DETECT	ENTER
PRIVACY MASK	ENTER
TIME SETTING	ENTER
SCHEDULE	ENTER
EXIT OSD	YES

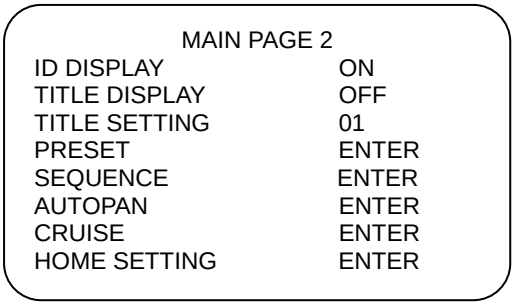
26× Model

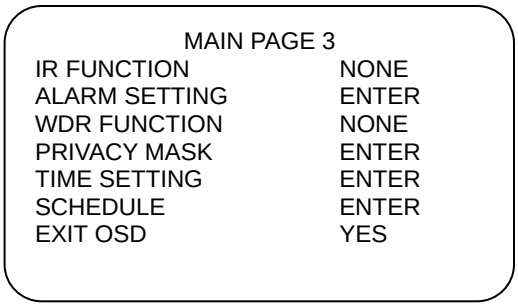
MAIN PAGE 2	
ID DISPLAY	ON
TITLE DISPLAY	OFF
TITLE SETTING	01
PRESET	ENTER
SEQUENCE	ENTER
AUTOPAN	ENTER
CRUISE	ENTER
HOME SETTING	ENTER

MAIN PAGE 3	
IR FUNCTION	AUTO
ALARM SETTING	ENTER
ALARM DETECT	ENTER
PRIVACY MASK	ENTER
TIME SETTING	ENTER
SCHEDULE	ENTER
EXIT OSD	YES

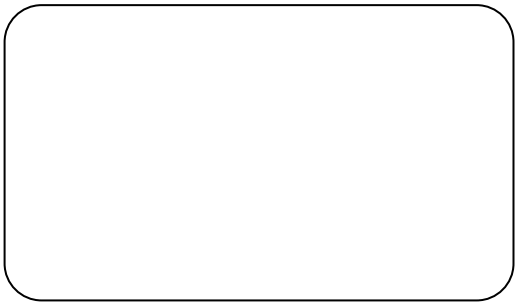
22×Model

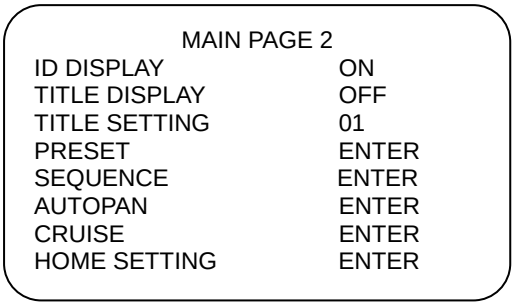


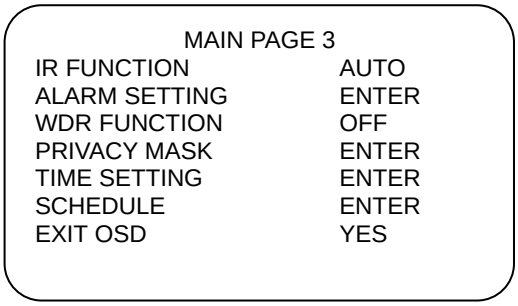




23× Model







To enter the OSD menu for the selected camera, press the <CAMERA MENU> button on the control keyboard and hold for 3 seconds to enter the OSD menu.

To select the setup option, use the direction keys on the keyboard to move the cursor in the OSD menu.

To set an item, use the direction keys on the keyboard to move the cursor in the OSD menu. For items with →, press the right/left direction buttons on the control keyboard

to select. For items with ↓, press the <CAMERA MENU> button on the control keyboard to enter the sub-menu. For items with →↓, users can use the right/left direction buttons to select functions then press the <CAMERA MENU> button on the control keyboard to enter its sub-menu.

For further detailed setup procedures, please refer to the user manual for the installed control units.

3.3.1 LANGUAGE

The camera supports multi-language operation; the available languages include English, French, German, Italian, Japanese, Polish, Portuguese, Russian and Spanish. As you select a language with the arrow keys, the OSD will automatically change to the language you selected. The default language is <ENGLISH>.

3.3.2 DEFAULT CAMERA

The DEFAULT CAMERA option is used to restore some camera settings back to default setting. The settings that are affected include Backlight, Focus, AE, WBC, Aperture, Zoom Speed and Digital Zoom. Once any one of the items is modified, the setting will become <OFF> automatically. Select <ON> for this item to recall the mentioned camera parameters.

3.3.3 BACKLIGHT

The backlight compensation function prevents the central object from being too dark in surroundings where excessive light is shining from behind it.

18×/26× Model:

Select <ON> to activate the function; the center object will be brightened in contrast to the edge of the picture (where a backlight would be most likely located).

22×23× Model:

The Backlight Compensation Level ranges from 00 to 30.

NOTE: If this function is enabled, the WDR function (for 23× model only) will be disabled automatically. For details, refer to section 3.3.20 WDR Setting.

3.3.4 FOCUS

The focus on the PTZ camera can be operated in two modes: Auto Focus mode and Manual Focus mode. Various settings for different models are described as follows.

18×/26× Model:

- **AUTO**

  The optimum focus is achieved using the internal digital circuit. There are 3 modes for users to select for different conditions.

  Normal AF (auto focus) mode: The PTZ camera will automatically adjust the focus of the picture.

  Zoom trigger mode: When the zoom ratio is changed using the TELE or WIDE buttons on the control keyboard or another control unit, the PTZ camera will automatically adjust the focus again after a period of time (the preset value is initially set to five seconds) until the commands of TELE/WIDE is terminated.

  Interval AF mode: This mode is used for AF movements carried out at particular intervals. If users pan/tilt the PTZ camera, the PTZ camera will focus automatically after a period of time. The preset value is five seconds.

- **MANUAL**

  In this focus mode, users can adjust the focus speed, ranging from 01 ~ 08.

FOCUS SPEED	01

22×/23× Model:

- **AUTO**

  The optimum focus is achieved using the internal digital circuit. Users can adjust the minimum auto focus range for certain special conditions; the options are <1 cm>, <10 cm>, <30 cm> and <1 m>.

TURNING VALUE	10CM

- **MANUAL**

  In this focus mode, users can adjust the focus speed, ranging from 0 ~ 3.

FOCUS SPEED	0

3.3.5 AE MODE

The exposure is the amount of light captured by the image sensor and is determined by the width of lens diaphragm opening (iris adjustment), the amount of exposure by

the sensor (shutter speed) and other exposure parameters. This option allows users to define how the Auto Exposure (AE) function works.

18×/26× Model:

- **EXPOSURE COMPENSATION**
  The exposure value rages from -10.5dB ~ 10.5dB. Select <OFF> to disable the function.

- **AE MODE**

  AUTO
  In this mode, the camera's Brightness, Shutter Speed, IRIS and AGC (Auto Gain Control) control circuits work together automatically to get consistent video output level.
  BRIGHT
  The brightness control function adjusts the IRIS and AGC gain using an internal algorithm. Brightness is controlled by gain when the light condition is dark and by iris when the light condition is bright. The bright value ranges from 00 ~ 31.
  SHUTTER
  With this option, SHUTTER speed takes main control of exposure, and both IRIS and AGC will function automatically in cooperation with shutter speed to achieve consistent exposure output. The shutter speed ranges from 1/10000 ~ 1.
  IRIS
  With this option, the IRIS function adjusts exposure in higher property. SHUTTER speed and AGC circuit will function automatically in cooperating with IRIS to get consistent exposure output. The opening of a lens controls the amount of light reaching to the surface of the selected device. By increasing the F-stop number (F/1.6, F/2, F/2.4, etc.), less light is permitted to pass.
  MANUAL
  In the mode, users can adjust shutter speed (1/10000 ~ 1), iris value (F1.6 ~ F28) and gain value (-3dB ~ 28dB).

- **EXIT**
  Exit the **AE MODE** menu.

22×/23× Model:

- **AUTO**

  In this mode, the camera's shutter, IRIS and AGC control functions work together automatically to adjust the light exposure of the image sensor in order to obtain a consistent video output level. IRIS OFF SET is used to set the level of IRIS variation (00 ~ 15).

- **SHUTTER**

  With this option, the priority of SHUTTER is higher than IRIS and AGC; IRIS and AGC circuit will function automatically in cooperating with SHUTTER to get consistent exposure. The value of shutter speed ranges from 1/30000 ~ 1/2.

- **IRIS**

  With this option, the priority of IRIS is higher than SHUTTER and AGC; SHUTTER and AGC circuit will function automatically in cooperating with IRIS to get consistent exposure. If the IRIS is modified manually, the action of exposure compensation depends on the AGC circuit. The range of Iris level is between 00 and 09.

- **AGC**

  With this option, the priority of AGC is higher than SHUTTER and IRIS; SHUTTER and IRIS circuit will function automatically in cooperating with AGC to get consistent exposure. If AGC is adjusted manually, the exposure compensation depends on the changing of IRIS. The range of Iris level is between 00 and 05.

3.3.6 WBC MODE

A digital camera needs to find a reference colour temperature, which is a way of measuring the quality of a light source, in order to correctly calculate all the other colours. The unit for measuring this ratio is degrees Kelvin (K). You can select one of the white balance control modes depending on the conditions. The following table shows the colour temperature of some light sources.

Light source	Colour temperature in K
Cloudy sky	6,000 to 8,000
Noon sun and clear sky	6,500
Household lighting	2,500 to 3,000
75 watt bulb	2,820
Candle flame	1,200 to 1,500

18×/26× Model:

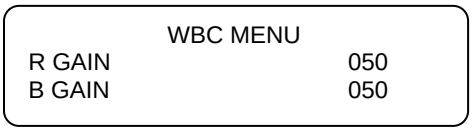
- **AUTO**
  In this mode, the white balance function works within its colour temperature range. This mode computes the white balance value output using colour information from the entire screen. It outputs the appropriate value using the colour temperature radiating from a black subject based on a range of values from 3000K to 7500K.

- **INDOOR**
  3200 K base mode.

- **OUTDOOR**
  5800 K base mode.

- **ATW (**Auto Tracing White Balance**)**
  The PTZ camera records the signals from a screen in the range from 2000 K to 10000 K.

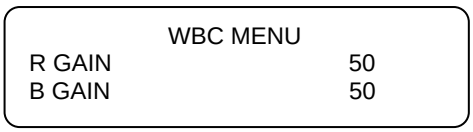
- **MANUAL**
  In this mode, the user can change the white balance value manually; R gain and B gain are adjustable in the range from 0 to 127.



22×/23× Model:

- **AUTO**
  In this mode, the white balance function works within its colour temperature range and calculates the best-fit white balance value.

- **MANUAL**
  In this mode, users can change the white balance value manually; R gain and B gain are adjustable in the range from 0 to 99.



3.3.7 SETUP MENU 1

18×/26× Model:

SETUP MENU 1	
ZOOM SPEED	8
DIGITAL ZOOM	ON
SLOW SHUTTER	OFF
IMAGE INVERSE	OFF
APERTURE	11
EXIT	YES

22×/23× Model:

SETUP MENU 1	
ZOOM SPEED	FAST
DIGITAL ZOOM	OFF
SLOW SHUTTER	OFF
IMAGE INVERSE	OFF
APERTURE	AUTO
EXIT	YES

- **ZOOM SPEED**

  This option is used to set the zoom speed for operating the PTZ camera.

  18×/26× Model:

  For these models, the zoom speed options are <1> (slow) ~ <8> (fast). The default setting is <8>.

  22×/23× Model:

  For these two models, the options are <FAST> (default) and <SLOW>.

- **DIGITAL ZOOM**

  This option allows users to enable or disable the 12× digital zoom. The digital zoom is activated after the full optical zoom level has been reached.

  NOTE: The difference between optical and digital zoom is that optical zoom uses the lens within the camera to draw the image closer by zooming in or out to achieve the desired effect. Optical zoom retains the full resolution and quality of the zoomed image. By contrast, digital zoom takes a portion of the image and expands that portion to the full size of the image; however the image quality will be reduced.

  18×/26× Model:

  On these models, a maximum 12× digital zoom function can be enabled. The default setting is <ON>.

  22×/23× Model:

  On these two models, the digital zoom ratio is adjustable from <1> to <12>. The default setting is <OFF>.

- **SLOW SHUTTER**

  The shutter speed determines how long the image sensor is exposed to light. To see a clear image in a dark environment, enable this function and select a slower shutter speed.

18×/26× Model:

When this digital slow shutter function is enabled, the PTZ camera will automatically adjust the shutter speed based on the lighting conditions in the installation environment. It enables users to see objects in a dark environment below 0.2 lux.

23x Model:

The shutter speed is adjustable on the 23x model. With the slowest shutter speed, the user can see objects in a dark environment below 0.2 lux or see a smooth video image with a higher shutter speed. The range of slow shutter speed is from <1/2> to <1/60>.

- **IMAGE INVERSE**

  Users can select <ON> to turn the displayed image upside down. For 22× and 23× models, when this function is enabled, the preset mask(s) will be set off automatically (see section 3.3.21 Privacy Mask). The default setting is <OFF>.

- **APERTURE**

  Under this setup menu, users can adjust enhancement of the edges of objects in the picture.

  18×/26× Model:

  There are 16 levels of adjustment; the options are <01> ~ <16>; <01> represents "no enhancement". When shooting text, this function could make it sharp.

  22×/23× Model:

  Users can select either the <AUTO> mode or <MANUAL> mode. Under the <MANUAL> mode, the parameters of H aperture and V aperture are adjustable, ranging from 00 to 31.

APERTURE MENU	
H APERTURE	00
V APERTURE	00

- **EXIT**

  Exit the **SETUP MENU 1** and go back to the **MAIN PAGE 1**.

3.3.8 SETUP MENU 2

18×/22×/23×/26× Model:

SETUP MENU 2	
FLIP	ENTER
ANGLE ADJUSTER	ENTER
SPEED BY ZOOM	OFF
AUTO CALI.	OFF
SYSTEM RESET	YES
EXIT	YES

- **FLIP (IMAGE/M.E./OFF)**

  The user can track an object continuously when it passes under the PTZ camera with a Flip setting of IMAGE (digital flip) or M.E. (mechanical flip).

FLIP SETTING	
FLIP	OFF
EXIT	YES

IMAGE

IMAGE represents digital IMAGE FLIP, which enables users to keep tracking objects seamlessly; under the mode, almost no delay occurs in comparing with that under the M.E. mode.

NOTE: The Privacy Mask function will be automatically disabled if the Image Flip function is enabled, and "Masking disabled" will be displayed on the screen.

M.E.

M.E. is a standard mechanical operation. As the camera tilts 90°, it will pan 180°, and then continue tilting to keep tracking objects.

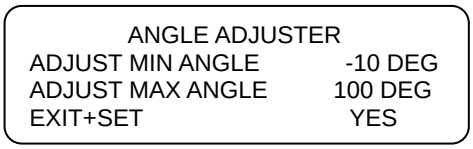
OFF

Select this option to disable the flip function.

NOTE: To make the PTZ camera tilt between -10° to +100° or -10° ~ +190°, please go to **ANGLE ADJUSTER** (see next section) to complete setting. Otherwise, the camera will only be able to tilt 90°.

- **ANGLE ADJUSTER**

  The item is for adjusting the angle of view. The Range of the view angle varies in different FLIP modes: the angle ranges from -10° to +100° in the M.E. FLIP and FLIP OFF modes, and from -10° ~ +190° in the IMAGE FLIP mode.



- **SPEED BY ZOOM**
  If the option is set to <ON>, the pan/tilt speed will be adjusted by an internal algorithm when zooming automatically. The larger zoom ratio results in a slower rotation speed.

- **AUTO CALI. (Auto Calibration)**
  There are one horizontal point and one vertical infrared rays check point in each PTZ Camera. During installation or maintenance, the PTZ camera's position may be moved. Therefore, the relative distance between the original set point and the check point will be changed. If enable the Auto Calibration function, the camera will automatically detect the matter and reset the horizontal point back to the original position.

- **SYSTEM RESET**
  Select this item for remote resetting.

- **EXIT**
  Exit the **SETUP MENU 2** and go back to the **MAIN PAGE 1**.

3.3.9 ID DISPLAY

The user can choose whether the PTZ camera ID will be displayed on the monitor to identify the camera. For more information, refer to section 2.4 PTZ Camera ID Setting.

- **ON**
  Display the ID address of the selected camera in the bottom right of the monitor screen.

- **OFF**
  Hide the ID address of the selected PTZ camera.

3.3.10 TITLE DISPLAY

The user can name a certain view area and display its title for easy recognition. In this option, the user can choose whether or not to display the titles set in advance.

- **ON**
  A title set for a certain view will be displayed when the PTZ camera returns to

that view area.

- **OFF**

  If TITLE DISPLAY is set to <OFF>, no title will be displayed on the screen even if titles have been set.

3.3.11 TITLE SETTING

Up to 16 zone titles can be set with a maximum 20 characters for each title. The user can name the zone titles with privacy mask ID numbers for future recognition.

NOTE: On the 23× model, the available area for setting the privacy mask is restricted to a tilt angle of 45°.

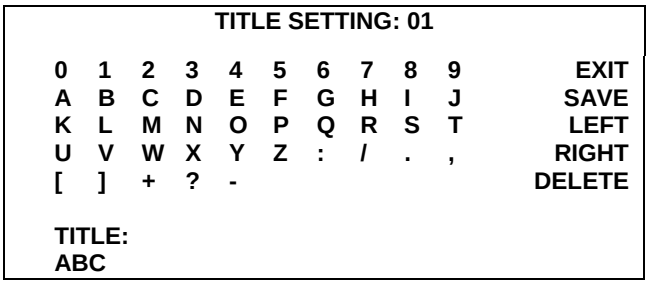
Follow the steps below to set a camera title.

STEP 1: Operate the dome to a view area where you want to set a title for it.

STEP 2: Turn on the OSD and go to the **MAIN PAGE 2** to select <TITLE SETTING>.

STEP 3: Select a number to represent the view area.

STEP 4: Press <ENTER> to go into the editing page.



STEP 5: Choose a character with direction keys and then press <ENTER> to input.
For example: <A > <ENTER>, <B> <ENTER>, <C> <ENTER>
TITLE: ABC

STEP 6: To delete input characters, move the cursor to <LEFT> or <RIGHT> and press <ENTER> to select a character in the entry field. Then move the cursor to <DELETE> and press <ENTER> to delete the selected character.

STEP 7: When the setting is completed, move the cursor to <SAVE> and press <ENTER> to save.

3.3.12 PRESET

- **PRESET SET**

  Move the camera to the targeted shooting area/point. When the cursor flashes, press "ENTER" to set the area/point as preset point 1, 2, 3, etc. Totally 256 preset points can be set.

- **PRESET RUN**
  Select the preset point that you want to execute. After pressing <ENTER>, the camera will turn to the appointed point.

- **EXIT**
  Exit the **PRESET** menu and go back to the **MAIN PAGE 2**.

Users could set preset points through a keyboard. Please refer to the PTZ camera's quick guide for further information.

3.3.13 SEQUENCE

This function carries out pre-positioning of the pan, tilt, zoom and focus features in a certain sequence for a camera. Before setting up this function, the user must set at least two preset points.

SEQUENCE	
SEQUENCE LINE	1
SEQUENCE POINT	01
PRESET POSITION	001
SPEED	1
DWELL TIME	001
RUN SEQUENCE	ENTER
EXIT	YES

- **SEQUENCE LINE**
  The PTZ camera has eight built-in sets of sequence lines. First use the LEFT/RIGHT direction keys to select a line and then set the associated sequence points.

- **SEQUENCE POINT**
  Up to 32 points can be specified for each sequence line. The sequence points represent the order of the preset points that the PTZ camera will automatically run. The following setup items, including PRESET POSITION, SPEED and DWELL TIME, will influence how the camera runs through each sequence point.
- **PRESET POSITION**
  The user can assign a specific preset position to the selected sequence point with this item.

- **SPEED**
  The user can set the speed of one sequence point to the next one, and the range of setup speed is from 1 to 15. Refer to the table below for more information.

	Pan (degree/sec.)	**Tilt** (degree/sec.)
Speed 1	10	8
Speed 2	23	12
Speed 3	35	22
Speed 4	45	30
Speed 5	55	40
Speed 6	65	50
Speed 7	75	58
Speed 8	185	185
Speed 9	205	210
Speed 10	225	240
Speed 11	250	275
Speed 12	280	305
Speed 13	320	335
Speed 14	365	365
Speed 15	400	400

- **DWELL TIME**

  The DWELL TIME is the duration time that the PTZ camera will stay at a sequence point, and the range is from <0> to <127> seconds. The PTZ camera will go to the next sequence point when the DWELL TIME expires. If the setting is <0>, the PTZ camera will stay at the sequence point until users manually move the camera.

- **RUN SEQUENCE**

  The user can command the PTZ camera to run the selected sequence line manually.

- **EXIT**

  Select this option to exit the **SEQUENCE** menu.

3.3.14 AUTOPAN

Auto-pan means motion of scanning an area horizontally so that the PTZ camera can catch horizontal view. The parameters are listed as follows.

```
          AUTOPAN
AUTOPAN LINE        1
START POINT         TO FIND
END POINT           TO FIND
DIRECTION           RIGHT
SPEED               1
RUN AUTOPAN         ENTER
EXIT                YES
```

- **AUTOPAN LINE**

  There are four sets of auto-pan line built in a PTZ camera. Users can choose

a line to execute using LEFT/RIGHT direction keys. In addition, users are able to command the camera to do endless panning by setting the start point the same as the end point.

- **START POINT**

  Follow the description to set the start position of the AUTOPAN path.

  1. Move the cursor to <START POINT> and press <ENTER> while <TO FIND> is flashing - the option will change to <TO SAVE> automatically.
  2. Move the PTZ camera to the desired position and press <ENTER> to save the position as the start point; the cursor will move to <END POINT> automatically. Set the end point to complete the auto-pan setting.

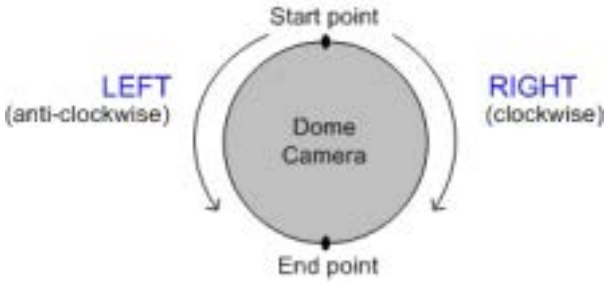
  NOTE: The tilt and zoom values of the start point will be recorded and fixed for the selected auto-pan line.

- **END POINT**

  The user can set the end point once the start point has been defined. Pan the PTZ camera to another position and press <ENTER> to save the position as the end point.

- **DIRECTION**

  This option is used to set the AUTOPAN direction of the PTZ camera. If you select <RIGHT>, the camera will start to pan clockwise from the start point to the end point and then return to the start point. If you select <LEFT>, the camera will start to pan anticlockwise from the start point to the end point. Refer to the diagram below.



- **SPEED**

  This option is for defining the PTZ camera rotation speed while running auto-pan. The speed is adjustable between 1 and 4; refer to the table below for details.

	PAN (degree/sec.)
Speed 1	10
Speed 2	23
Speed 3	35
Speed 4	45

- **RUN AUTOPAN**
  Once the setting is complete, select this option to manually execute the auto-pan function.

- **EXIT**
  Exit the **AUTOPAN** menu.

3.3.15 CRUISE

CRUISE is a route formed with manual operation, through adjusting pan, tilt position and zoom parameters, which can be stored and recalled to execute repeatedly (zoom setting only on 18×/26× model).

```
CRUISE
RECORD START        ENTER
RECORD END          ENTER
RUN CRUISE          ENTER
EXIT                YES
```

- **RECORD START**
  Follow the description to record the CRUISE path.
  1. Rotate the PTZ camera to the desired view area and press <ENTER> to create the cruise path using the joystick on the control unit. The percentage of the memory buffer used will be displayed on the screen.
  2. Pan and tilt the PTZ camera to create a path. The zoom setting is only available on the 18×/26× model.

  NOTE: Pay attention to the memory size when building a cruise path. Once the buffer percentage reaches 100%, recording of the path will stop.

- **RECORD END**
  The cursor will move to RECORD END while you are creating the cruise line; when the setting is complete, press <ENTER> to save the path.

- **RUN CRUISE**
  Once the setting is complete, select this option to manually execute the cruise

function.

- **EXIT**
  Exit the **CRUISE** menu.

3.3.16 HOME SETTING

The user can set an operating mode to ensure constant monitoring; if the PTZ camera is idle for a period of time, the preset function will be activated automatically, this is the HOME function. The HOME function allows continuous and accurate monitoring and prevents the PTZ camera stopping or missing events.

HOME SETTING	
HOME FUNCTION	OFF
SELECT MODE	PRESET
PRESET POINT	001
RETURN TIME	001 MIN.
GO	ENTER
EXIT	YES

- **HOME FUNCTION**
  The item is used to enable or disable the HOME function. Use the left/right direction keys of the control keyboard to change the setting.

- **SELECT MODE**
  Select one of the modes that the PTZ camera should execute when the HOME function is enabled and the RETURN TIME expires. The options include <AUTOPAN>, <SEQUENCE>, <CRUISE> and <PRESET>. Use the left/right direction keys of the control keyboard to change the setting, and the items below will change in cooperating with your selection.

- **PRESET POINT**
  Select a preset point where the PTZ camera should go after the Return Time function, which will be mentioned later, is activated. The preset point(s) should be set prior either in the PRESET setup menu or through the keyboard.
  SEQUENCE LINE
  Select a sequence line that the PTZ camera should execute after the Return Time function is activated. The sequence line(s) should be defined prior either in the SEQUENCE setup menu or through the keyboard.
  AUTOPAN LINE
  Select an auto-pan line that the PTZ camera should execute after the Return Time function is activated. The auto-pan line(s) should be defined prior either

in the AUTOPAN setup menu or through the keyboard

CRUISE LINE

Select a cruise line that the dome camera should execute after the Return Time function is activated. The cruise line should be defined prior either in the CRUISE setup menu or through the keyboard.

- **RETURN TIME**

  The camera starts to count down RETURN TIME when the dome idles, and then execute the SELECT MODE function when the return time expires. The RETURN TIME ranges from 0 to 128 minutes.

- **GO**

  If the HOME function is enabled, the user can execute the HOME function by selecting this option.

- **EXIT**

  Exit the **HOME SETTING** menu.

3.3.17 IR FUNCTION (Removable IR Blocking)

The IR blocking filter enables the PTZ camera to capture a clear image at night time or in low light conditions. During the day, the IR blocking filter is fitted to block the infrared light and ensure a clear image; at night, the IR blocking filter is removed to catch the available infrared rays to view images in black and white. On the 23× model, the user can view colour images when the IR function is activated.

Refer to the description below to operate the IR function.

18x/26x Model :

- **AUTO**

  The internal circuit will automatically decide when to remove the IR blocking filter according to the value of light condition calculated by the internal algorithm.

- **ON**

  Select this option to remove the IR blocking filter.

23x Model:

- **AUTO**

  The Internal circuit will automatically decide the occasion to remove the IR blocking filter according to the image brightness level.

- **ON**

  Select the item to remove the IR blocking filter.

IR FUNCTION	
THRESHOLD	LOW
IR COLOR	COLOR
EXIT	YES

THRESHOLD

The camera will remove the filter immediately when the threshold value is reached. The threshold options are <LOW>, <MID> and <HI>. <LOW> threshold indicates a higher sensitivity and can improve reliability of lens.

IR COLOR

When the IR function is enabled, the video output can be programmed as color or B/W (black and white).

3.3.18 ALARM SETTING

The PTZ camera provides eight alarm inputs and one alarm output (N.O. or N.C) to connect alarm devices. This function enables the PTZ camera to work in conjunction with an alarm system to capture images of a particular event. For wiring details, please refer to the installation guide and/or qualified service personnel. Adjustable alarm parameters are listed below.

ALARM SETTING	
ALARM PIN	1
ALARM SWITCH	OFF
ALARM TYPE	N.C.
ALARM ACTION	PRESET
PRESET POINT	001
DWELL TIME	ALWAYS
EXIT	YES

- **ALARM PIN**

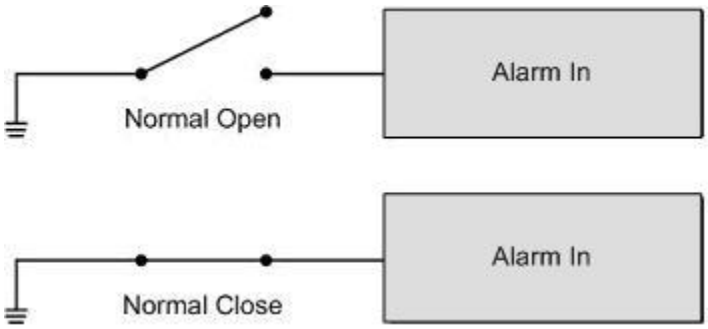
  The PTZ camera provides eight alarm inputs and one output (N.O. or N.C). Select an alarm connection for which you want to use this option to set alarm-related parameters and then set those parameters in the Alarm Setting menu. For alarm pin definitions, refer to section 2.6 22-Pin Connector Definition or the installation guide.

- **ALARM SWITCH**

  This option is used to enable or disable the selected alarm pin function. Use the left/right direction keys on the control keyboard to change the setting.

- **ALARM TYPE**

  There are two alarm types: Normally open and Normally closed, which are illustrated below. Select an alarm type that corresponds to the alarm application.



- **ALARM ACTION**

  The alarm actions include PRESET, SEQUENCE, AUTOPAN and CRUISE functions. Select one of these modes so that certain action will be executed when an alarm is triggered. Use the right direction key of the control keyboard to select a particular action mode, and the items listed below will change in accordance with your selected alarm action.

- **PRESET POINT**

  Select a preset point where the camera should go when an alarm pin is triggered. The preset point(s) should be set prior either in the PRESET setup menu or through the keyboard.

  SEQUENCE LINE

  Select a sequence line that the PTZ camera should execute when an alarm pin is triggered. The sequence line(s) should be defined prior either in the SEQUENCE setup menu or through the keyboard.

  AUTOPAN LINE

  Select an auto-pan line that the camera should execute when an alarm pin is triggered. The auto-pan line(s) should be defined prior either in the AUTOPAN setup menu or through the keyboard.

  CRUISE LINE

  Select a cruise line that the camera should execute when an alarm pin is triggered. The cruise line should be defined prior either in the CRUISE setup menu or through the keyboard.

- **DWELL TIME**

  The DWELL TIME is duration of executing an alarm action. If select the PRESET mode, when alarm takes place, the camera will go to the selected preset position and stay there for a user-defined period of time (1~127seconds/Always). If select other modes (SEQUENCE/AUTOPAN/ CRUISE), the camera will keep executing the selected mode (DWELL TIME: ALWAYS) until alarm condition is released or users rotate the dome.

NOTE: The dwell time is only adjustable when selecting **Preset** as the alarm action.

- **EXIT**
  Exit the ALARM SETTING menu.

3.3.19 ALARM DETECT (18× / 26× Model Only)

This function instructs the camera to detect movement within the monitoring area and then send an alarm signal automatically. Before activating this function, alarm connection setups must be completed in advance.

ALARM DETECT	
DETECT SWITCH	OFF
DETECT MODE	INT. FOCU
EXIT	YES

- **DETECT SWITCH**
  This option is used to enable or disable the ALARM DETECTION function.

- **DETECT MODE**
  Four alarm detection modes are provided for different applications.

INT. FOCUS (Internal Focus)
The alarm will be triggered if the internal focus changes; if the focus returns to the original position, the alarm will stop.
FIX FOCUS
If focus movement is detected, the alarm will be triggered, and the alarm stops when the focus returns to the original position. If the detected focus movement keeps changing for more than four seconds, the new focus position will be memorized as the reference, and the alarm will stop.

NOTE: The INT. FOCUS and FIX FOCUS detection modes will only be activated in auto focus mode.

INT. AE (Internal AE)
When Auto Exposure (AE) movement is detected, the alarm will be triggered; if the Exposure Level returns to the original level, the alarm will stop.
FIX AE
The alarm will be triggered if the Exposure value changes; if the adjusted AE value persists for four seconds, the new value will be saved as the reference, and the alarm will stop.

- **EXIT**
  Exit the **ALARM DETEC**T page.

3.3.20 WDR FUNCTION (23× Model Only)

The Wide Dynamic Range (WDR) function is especially effective in solving indoor and outdoor contrast issues to enhance better image quality and video display. It enables the PTZ camera to catch detailed data from the dark part (Indoor) without any saturation from the bright part (Outdoor).

NOTE: The Backlight function will be automatically turned off when the WDR function is enabled because the WDR function has better effects than Backlight Compensation.

- **AUTO**
  In this mode, the PTZ camera will operate the WDR function automatically.

- **ON**
  Under the item, users can define three parameters' value: RATIO LEVEL (000 ~ 128), SHUTTER SPEED (000 ~ 128) and IRIS OFFSET (000 ~ 128), as shown in the following column.

WDR MODE	
RATIO LEVEL	000
SHUTTER SPEED	000
IRIS OFFSET	000
EXIT	YES

- **EXIT**
  Exit the **WDR FUNCTION** menu.

3.3.21 PRIVACY MASK

The Privacy Mask function aims to avoid any intrusive monitoring. Users can adjust the camera view position using the joystick, and adjust the mask size and area via the direction keys on the control keyboard. The PTZ camera will memorize the center of the selected view as an original point, so the joystick will be locked as users enter the SET MASK menu (mentioned later). Refer to the following description for setting privacy masks.

NOTE: The Image Flip function (for all models) and the Image Inverse function (for 23× model) will be disabled automatically while the Privacy Mask function is enabled.

18×/26× Model:

PRIVACY MASK MENU	
PRIVACY SWITCH	OFF
TRANSPARENCY	OFF
COLOR	BLACK
SET MASK	01
CLEAR MASK	01
EXIT	YES

- **PRIVACY SWITCH**

  Users can enable or disable the Privacy Mask function through this item. Set this item to <ON> before configuring mask zones.

- **TRANSPARENCY**

  The color of privacy mask can be set as transparent. Select <ON> to display transparent masks.

- **COLOUR**

  The color of privacy mask can be set through this item. The available colours are black, grey, light grey (LI. GRAY), white, red, green, blue, cyan, yellow and magenta.

- **SET MASK**

  Use the control unit to move the PTZ camera to the area in which you want to set a mask. Press <ENTER> to enter the **SET MASK** menu. The camera will memorize the present position as a privacy mask position. Up to 24 masks can be set.

MASK01 MENU	
H CENTER	L/R
V CENTER	D/U
H SIZE	000
V SIZE	000
EXIT+SAVE	YES

H CENTER

The original horizontal centre of the mask zone is the centre of the screen; it can be moved to another position by adjusting the horizontal value using the LEFT/RIGHT keys. The camera will pan right or left according to user's control.

V CENTRE

The original vertical centre of the mask zone is the centre of the screen; it can be moved to another position by adjusting the vertical value using the LEFT/RIGHT keys. The camera will tilt up or down according to user's control.

H SIZE (00~80)

Users can adjust the horizontal size of a privacy mask through this item. Set the H and V size to 0 can also delete the selected mask.

V SIZE (00~60)

Users can adjust the vertical size of a privacy mask through this item. Set the H and V size to 0 can also delete the selected mask.

- **CLEAR MASK**

  Users can delete a preset mask zone with this item. Please follow the steps listed below.

  1. Select the mask zone that will be erased (e.g. 01).
  2. Press <ENTER> to confirm the selection. Consequently, the screen will display the instructions to reset after the mask is cleared.
  3. Select <RESET> under the CLEAR MASK item and press <ENTER> to proceed with resetting.

- **EXIT**

  Exit the **PRIVACY MASK** page.

23× Model:

PRIVACY	
PRIVACY SWITCH	OFF
SHADE	BLACK
SET MASK	01
CLEAR MASK	01
MASK DISPLAY	FIRST
EXIT	YES

- **PRIVACY SWITCH**

  This option is used to enable or disable the masking function. Set this item to <ON> before configuring mask zones.

- **SHADE**

  The color of a privacy mask can be selected through this item. The available colours are black, gray and white.

- **SET MASK**

  After pressing <ENTER> to enter the sub-menu of SET MASK, the camera will memorize the present position as a privacy mask position; up to 8 masks can be set. The model restricts the mask zones to be set too close with each other.

MASK01 MENU	
H CENTER	000
V CENTER	000
H SIZE	000
V SIZE	000
EXIT+SAVE	YES

H CENTRE (000~255)

The original centre of the mask zone is the centre of the screen. The user can move the centre of the mask zone to another position by adjusting this value by pressing the LEFT/RIGHT keys.

V CENTRE (000~255)

The original centre of the mask zone is the centre of the screen. The user can move the centre of the mask zone to another position by adjusting this value by pressing the LEFT/RIGHT keys.

H SIZE (000~127)

This option allows the user to adjust the horizontal size of the privacy mask. Setting the H and V size to 0 deletes the selected mask.

V SIZE (000~127)

This option allows the user to adjust the vertical size of the privacy mask. Setting the H and V size to 0 deletes the selected mask.

- **CLEAR MASK**

  Users can delete a preset mask zone with this item. Please follow the steps listed below.

  1. Select the mask zone that will be erased (e.g. 01).
  2. Press <ENTER> to confirm the selection. Consequently, the screen will display the instructions to reset after the mask is cleared.
  3. Select <RESET> under the CLEAR MASK item and press <ENTER> to proceed with resetting.

- **MASK DISPLAY**

  This item is used to set the time to display a privacy mask.

  FIRST

  If select this mode, the camera will detect the mask zone at the next preset position and display the mask in advance, and then pan the dome to the preset point.

  LAST

  If select this mode, the camera will move the dome to the preset point, and then display the mask zone.

NOTE: On the 23x model, the available area for setting the privacy mask is restricted to a tilt angle of 45° and two mask zones are permitted in a view area.

- **EXIT**
  Exit the **PRIVACY MASK** page.

3.3.22 TIME SETTING

The time setting function is used to set the TIME related parameters of the integrated high speed dome. Each item in the menu is listed as follows.

TIME SETTING	
TIME DISPLAY	OFF
SET YEAR	05
SET MONTH	10
SET DAY	02
SET HOUR	12
SET MINUTE	12
EXIT+SAVE	YES

- **TIME DISPLAY**
  Select <ON> to display time information on screen or <NO> not to display.

- **YEAR / MONTH / DAY**
  These options are for setting up the system date.

- **HOUR / MINUTE**
  These options are for setting up the system time.

- **EXIT+SAVE**
  Exit the **TIME SETTING** page.

3.3.23 SCHEDULE

The schedule function enables users to program a preset point or function (Sequence/Auto-pan/Cruise) automatically to perform in a specific period of time.

SCHEDULE	
SCHEDULE SWITCH	ON
SCHEDULE POINT	01
SCHEDULE HOUR	11
SCHEDULE MINUTE	53
SCHEDULE MODE	PRESET
PRESET POINT	001
SCHEDULE RESET	YES
SCHEDULE EXIT	YES

- **SCHEDULE SWITCH**
  Select <ON> to enable or <OFF> to disable the schedule function.

- **SCHEDULE POINT**
  Users are allowed to arrange 32 sets of schedule point, i.e. each set of schedule point can be assigned one kind of schedule modes.

- **SCHEDULE HOUR / MINUTE**
  The items are for setting up the time to execute each schedule point.

- **SCHEDULE MODE**
  This is for setting the schedule function of the selected schedule point; the options are listed as follows.

  NONE
  No action will be executed for the schedule if select the item.
  PRESET
  Users can select the PRESET mode as an action carried out in a schedule point.
  SEQUENCE
  Users can select the SEQUENCE mode as an action carried out in a schedule point.
  AUTOPAN
  Users can select the AUTOPAN mode as an action carried out in a schedule point.
  CRUISE
  Users can select the CRUISE mode as an action carried out in a schedule point.
  IR FUNC. (IR Function)
  If select the IR function mode, the AUTO IR FUNCTION will be activated for a schedule point.

- **SCHEDULE RESET**
  Users can reset the whole schedule with the item.

- **SCHEDULE EXIT**
  Exit the **SCHEDULE** menu.

3.3.24 EXIT OSD

To exit the OSD setup menu, the user can either select this option or press the ESC button on the control keyboard.

Appendix A: Technical Specifications

	Item		22× Model	18× Model	23× Model	26× Model
CAMERA						
	Effective pixels	NTSC	380k			
		PAL	440k			
	Horizontal resolution	NTSC	480 TV lines			
		PAL	480 TV lines			
	Scanning area		Progressive 1/4" CCD	1/4" CCD ExView	Progressive 1/4" CCD	1/4" CCD ExView
	Scanning system		PAL, NTSC			
	Synchronisation		Internal / Line lock			
	Video output		1.0 Vp-p / 75Ω, BNC			
	S/N ratio (AGC OFF)		More than 49dB			
	Minimum illumination		1 lux	0.7 lux	0.01 lux, 0 lux (IR illuminator)	0.01 lux, 0 lux (IR illuminator)
	Focal length		4~88 mm	4.1~73.8 mm	3.6~82.8 mm	3.5~91 mm
	Zoom ratio		22× optical zoom	18× optical zoom	23× optical zoom	26× optical zoom
	Digital zoom		×1 ~ ×12 variable			
	Focus mode		Auto / Manual			
	White balance		Auto / Manual			
	Iris control		Auto / Manual			
	Electronic shutter	NTSC	1/60~1/30k sec.	1/1~1/10k sec.	1/2~1/30k sec.	1/1~1/10k sec.
		PAL	1/50~1/30k sec	1/1~1/10k sec	1/1.5~1/30k sec	1/1~1/10k sec
	AGC control		Auto / Manual			
	Back light compensation		On / Off			
OPERATION						
	Built-in protocols		Ganz-S , Ganz-PT, Pelco-P&D, VCL, Philips, AD-Manchester, AD-422 etc.			
	Pan travel		360° continuous			
	Tilt travel		-10°~100°	-10°~190°		
	Manual speed		1°~90°/s			
	Presets		256			
	Preset accuracy	Pan	0.225°			
		Tilt	0.45°			
	Preset speed**	Pan	5°~400°/s, high resolution (both D&E type motor)			
		Tilt	5°~400°/s, standard resolution (D type motor) 5°~400°/s, high resolution (E type motor)			
	Cruise		1			
	Sequence		8			
	Auto pan		4			
	Privacy mask		-	24	8	24
	Pan & tilt proportional to zoom ratio		Yes	Yes	Yes	Yes
	P/T/Z auto-restore		Yes	Yes	Yes	Yes
	Auto turn around		Yes	Yes	Yes	Yes
	Zone title		Yes	Yes	Yes	Yes
	Home function		Yes	Yes	Yes	Yes
	Digital flip		-	Yes	Yes	Yes
	Digital slow shutter		-	Yes	Yes	Yes
	Motion detection		-	Yes	-	Yes
	Wide dynamic range		-	-	Yes	-
	Day/night: IR cut filter		-	-	Yes	Yes
GENERAL						
	Environment		Indoor / Outdoor			
	Controller interface		RS-485			
	Operating temperature		Indoor: 0°C~40°C (32°F~104°F) Outdoor: -50°C~50°C (-58°F~122°F)			
	Waterproof standard		IP 66 Standard (outdoor only)			
	Dimensions	Indoor	Ø131 × 226 mm (5.2 x 7.6 inches)			
		Outdoor	Ø 172 x 302.5mm (6.7 x 11.9 inches)			
			Ø 190 x 302.5mm (7.5x 11.9 inches), with sunshield			
	Weight	Indoor	1.6kg (3.5 lbs)			
		Outdoor	5.8 kg (12.9 lbs)			
	Power source	Indoor	AC 24 V			
		Outdoor	AC 24 V			
	Power consumption		30 W / 65 W (with heater)			
	Regulatory standards		CE, FCC, IP66			

**D&E motors are available for different PTZ cameras and featuring various "Preset speeds" and resolutions. Standard resolution: 800 steps/resolution. High resolution: 1600 steps/resolution.

OSD Menu Notes

The following OSD menu tables are provided for users to record various PTZ camera setting.

<18× / 26× Model>

Item	Layer 1	Layer 2	Layer 3	Notes
LANGUAGE	<ENGLISH>, <FRENCH>, <GERMAN>, <ITALIAN>, <JAPANESE>, <POLISH>, <PORTUGUESE>, <RUSSIAN>, <SPANISH>			
DEFAULT CAMERA	<ON>, <OFF>			
BACKLIGHT	<ON>, <OFF>			
FOCUS	AUTO	AF MODE <NORMAL>, <INTERVAL>, <ZOOM TRIG>		
	MANUAL	FOCUS SPEED <01>~<08>		
AE MODE	EXPODURE COMP.	<OFF>, EXPOSURE VALUE: <-10.5dB> ~ <10.5dB>		
	AE MODE	AUTO		
		BRIGHT	BRIGHT VALUE <00> ~ <31>	
		SHUTTER	SHUTTER SPEED <1> ~ <1/10000> SEC.	
		IRIS	IRIS <CLOSE>, <F1.6> ~ <F28>	
		MANUAL	BRIGHT VALUE: AUTO	
			SHUTTER SPEED <1/10000> ~ <1>	
			IRIS VALUE <F1.6> ~ <F28>	
			GAIN VALUE <-3>dB ~ <28>dB	
	EXIT	YES		
WBC MODE	AUTO (Auto White Balance)			
	INDOOR			
	OUTDOOR			
	ATW (Auto-tracing WBC)			
	MANUAL	R GAIN <000> ~ <127>		
		B GAIN <000> ~ <127>		
SETUP MENU 1	ZOOM SPEED	<1> ~ <8>		
	DIGITAL ZOOM	<ON>, <OFF>		
	SLOW SHUTTER	<ON>, <OFF>		
	IMAGE INVERSE	<ON>, <OFF>		
	APERTURE	<01> ~ <16>		
	EXIT	YES		
SETUP MENU 2	FLIP	<OFF>, <M.E.>, <IMAGE>		
	ANGLE ADJUSTER	MIN ANGLE<-10 ~ +10 DEG>,		
		MAX ANGLE <080 ~ 100 DEG>		
	SPEED BY ZOOM	<ON>, <OFF>		
	AUTO CALI.	<ON>, <OFF>		
	SYSTEM RESET	YES		
	EXIT	YES		
ID DISPLAY	<ON>, <OFF>			
TITLE DISPLAY	<ON>, <OFF>			
TITLE SETTING	<01> ~ <16>			
PRESET	PRESET SET	<001>~<256>		
	PRESET RUN	<001>~<256>		
	EXIT	YES		
SEQUENCE	SEQUENCE LINE	<1> ~ <8>		
	SEQUENCE POINT	<01> ~ <32>		

Item	Layer 1	Layer 2	Layer 3	Notes
	PRESET POS.	<001> ~ <255>, <END>		
	SPEED	<01> ~ <15>		
	DWELL TIME	<000> ~ <127> SEC.		
	RUN SEQUENCE	ENTER		
	EXIT	YES		
AUTOPAN	AUTOPAN LINE	<1> ~ <4>		
	START POINT	<TO FIND>, <TO SAVE>		
	END POINT	<TO FIND>, <TO SAVE>		
	DIRECTION	<RIGHT>, <LEFT>		
	SPEED	<01> ~ <04>		
	RUN AUTOPAN	ENTER		
	EXIT	YES		
CRUISE	RECORD START	ENTER		
	RECORD END	ENTER		
	RUN CRUISE	ENTER		
	EXIT	YES		
HOME SETTING	HOME FUNCTION	<ON>, <OFF>		
	SELECT MODE	<PRESET>, <SEQUENCE>, <AUTOPAN>, <CRUISE>		
	PRESET POINT	<001> ~ <256>		
	SEQUENCE LINE	<1> ~ <8>		
	AUTOPAN LINE	<1> ~ <4>		
	CRUISE LINE	<1>		
	RETURN TIME	<000> ~ <128> MIN.		
	GO	ENTER		
	EXIT	YES		
IR FUNCTION (26× Model only)	<AUTO>, <ON>			
ALARM SETTNG	ALARM PIN	<1> ~ <8>		
	ALARM SWITCH	<ON>, <OFF>		
	ALARM TYPE	<N.O.> (Normal Open), <N.C.> (Normal Close)		
	ALARM ACTION	<PRESET>, <SEQUENCE>, <AUTOPAN>, <CRUISE>		
	PRESET POINT	<001> ~ <256>		
	SEQUENCE LINE	<1> ~ <8>		
	AUTOPAN LINE	<1> ~ <4>		
	CRUISE LINE	1		
	DWELL TIME	<001> ~ <127> Sec., <ALWAYS>		
	EXIT	YES		
ALARM DETECT	DETECT SWITCH	<ON>, <OFF>		
	DETECT MODE	<INT FOCUS>, <FIX FOCUS>, <INT AE>, <FIX AE>		
	EXIT	YES		
PRIVACY MASK	PRIVACY SWITCH	<ON>, <OFF>		
	TRANSPARENCY	<ON>, <OFF>		
	COLOR	<BLACK>, <LI. GRAY>, < GRAY>, <WHITE>, <RED>, <GREEN>, <BLUE>, <CYAN>, <YELLOW>, <MAGENTA>		
	SET MASK	<01> ~ <24>	H CENTER: L/R	
			V CENTER: D/U	
			H SIZE <000> ~ <080>	
			V SIZE <000> ~ <060>	
			EXIT + SAVE	
	CLEAR MASK	<01> ~ <24>		
	EXIT	YES		
TIME SETTING	TIME DISPLAY	<ON>, <OFF>		
	SET YEAR	<00> ~ <99>		
	SET MONTH	<01> ~ <12>		
	SET DAY	<00> ~ <31>		
	SET HOUR	<00> ~ <23>		
	SET MINUTE	<00> ~ <59>		

Item	Layer 1	Layer 2	Layer 3	Notes
	EXIT+SAVE			
SCHEDULE	SCHEDULE SWITCH	<ON>, <OFF>		
	SCHEDULE POINT	<01> ~ <32>		
	SCHEDULE HOUR	<00> ~ <23>		
	SCHEDULE MINUTE	<00> ~ <59>		
	SCHEDULE MODE	NONE	NO FUNCTION	
		PRESET	PRESET POINT <001> ~ <256>	
		SEQUENCE	SEQUENCE LINE <1> ~ <8>	
		AUTOPAN	AUTOPAN LINE <1> ~ <4>	
		CRUISE	CRUISE LINE <1>	
		IR FUNC.	IR FUNCTION AUTO	
	SCHEDULE RESET	YES		
	SCHEDULE EXIT	YES		
EXIT OSD	YES			

<22× / 23× Model>

Item	Layer 1	Layer 2	Layer 3	Notes
LANGUAGE	<ENGLISH>, <FRENCH>, <GERMAN>, <ITALIAN>, <JAPANESE>, <POLISH>, <PORTUGUESE>, <RUSSIAN>, <SPANISH>			
DEFAULT CAMERA	<ON>, <OFF>			
BACKLIGHT	<ON>	BLC LEVEL <00> ~ <30>		
	<OFF>			
FOCUS	AUTO	TUNING VALUE <1CM>, <10CM>, <30CM>, <1M>		
	MANUAL	FOCUS SPEED <0> ~ <3>		
AE MODE	AUTO	IRIS OFFSET <00> ~ <15>		
	SHUTTER	SHUTTER SPEED <1/30000> ~ <1/2>		
	IRIS	<00> ~ <09>		
	AGC	<00> ~ <05>		
WBC MODE	AUTO (Auto White Balance)			
	MANUAL	R GAIN <00> ~ <99> B GAIN <00> ~ <99>		
SETUP MENU 1	ZOOM SPEED	<FAST>, <SLOW>		
	DIGITAL ZOOM	<OFF>, <02> ~ <12>		
	SLOW SHUTTER (23× Model only)	<1/2> ~ <1/60> (NTSC)		
		<1/1.5> ~ <1/50> (PAL)		
	IMAGE INVERSE	<ON>, <OFF>		
	APERTURE	<AUTO>		
		<MANUAL>	H APERTURE <00> ~ <31> V APERTURE <00> ~ <31>	
	EXIT	YES		
SETUP MENU 2	FLIP	<OFF>, <M.E.>, <IMAGE>(23× Model only)		
	ANGLE ADJUSTER	MIN ANGLE<-10 ~ +10 DEG>,		
		MAX ANGLE <080 ~ 100 DEG>		
	SPEED BY ZOOM	<ON>, <OFF>		
	AUTO CALI.	<ON>, <OFF>		
	SYSTEM RESET	YES		
	EXIT	YES		
ID DISPLAY	<ON>, <OFF>			
TITLE DISPLAY	<ON>, <OFF>			
TITLE SETTING	<01> ~ <16>			
PRESET	PRESET SET	<001>~<256>		
	PRESET RUN	<001>~<256>		
	EXIT	YES		
SEQUENCE	SEQUENCE LINE	<1> ~ <8>		
	SEQUENCE POINT	<01> ~ <32>		
	PRESET POS.	<001> ~ <255>, <END>		
	SPEED	<01> ~ <15>		
	DWELL TIME	<000> ~ <127> SEC.		
	RUN SEQUENCE	ENTER		
	EXIT	YES		
AUTOPAN	AUTOPAN LINE	<1> ~ <4>		
	START POINT	<TO FIND>, <TO SAVE>		
	END POINT	<TO FIND>, <TO SAVE>		
	DIRECTION	<RIGHT>, <LEFT>		
	SPEED	<01> ~ <04>		
	RUN AUTOPAN	ENTER		
	EXIT	YES		
CRUISE	RECORD START	ENTER		
	RECORD END	ENTER		
	RUN CRUISE	ENTER		
	EXIT	YES		
HOME SETTING	HOME FUNCTION	<ON>, <OFF>		
	SELECT MODE	<PRESET>, <SEQUENCE>, <AUTOPAN>, <CRUISE>		

Item	Layer 1	Layer 2	Layer 3	Notes
	PRESET POINT	<001> ~ <256>		
	SEQUENCE LINE	<1> ~ <8>		
	AUTOPAN LINE	<1> ~ <4>		
	CRUISE LINE	<1>		
	RETURN TIME	<000> ~ <128> MIN.		
	GO	ENTER		
	EXIT	YES		
IR FUNCTION (23× Model only)	<AUTO>, <ON>	THREADHOLD <MID>, <HI>, <LOW> IR COLOR <B/W>, <COLOR> EXIT <YES>		
ALARM SETTNG	ALARM PIN	<1> ~ <8>		
	ALARM SWITCH	<ON>, <OFF>		
	ALARM TYPE	<N.O.> (Normal Open), <N.C.> (Normal Close)		
	ALARM ACTION	<PRESET>, <SEQUENCE>, <AUTOPAN>, <CRUISE>		
	PRESET POINT	<001> ~ <256>		
	SEQUENCE LINE	<1> ~ <8>		
	AUTOPAN LINE	<1> ~ <4>		
	CRUISE LINE	1		
	DWELL TIME	<001> ~ <127> Sec., <ALWAYS>		
	EXIT	YES		
WDR FUNCTION (23× Model only)	<ON>	RATIO LEVEL <000> ~ <128> SHUTTER SPEED <000> ~ <128> IRIS OFFSET <000> ~ <128> EXIT <YES>		
	<OFF>			
PRIVACY MASK (23× Model only)	PRIVACY SWITCH	<ON>, <OFF>		
	MASK SHADE	<GRAY>, <WHITE>, <BLACK>		
	SET MASK	<01> ~ <08>	H CENTER <000> ~ <255>	
			V CENTER <000> ~ <255>	
			H SIZE <000> ~ <127>	
			V SIZE <000> ~ <127>	
			EXIT + SAVE	
	CLEAR MASK	<01> ~ <08>, <RESET>		
	MASK DISPLAY	<FIRST>, <LAST>		
	EXIT	YES		
TIME SETTING	TIME DISPLAY	<ON>, <OFF>		
	SET YEAR	<00> ~ <99>		
	SET MONTH	<01> ~ <12>		
	SET DAY	<00> ~ <31>		
	SET HOUR	<00> ~ <23>		
	SET MINUTE	<00> ~ <59>		
	EXIT+SAVE			
SCHEDULE	SCHEDULE SWITCH	<ON>, <OFF>		
	SCHEDULE POINT	<01> ~ <32>		
	SCHEDULE HOUR	<00> ~ <23>		
	SCHEDULE MINUTE	<00> ~ <59>		
	SCHEDULE MODE	NONE	NO FUNCTION	
		PRESET	PRESET POINT <001> ~ <256>	
		SEQUENCE	SEQUENCE LINE <1> ~ <8>	
		AUTOPAN	AUTOPAN LINE <1> ~ <4>	
		CRUISE	CRUISE LINE <1>	
		IR FUNC.	IR FUNCTION AUTO	
	SCHEDULE RESET	YES		
	SCHEDULE EXIT	YES		
EXIT OSD	YES			

Specifications are subject to change without notice

CBC Co.,Ltd.
Tokyo, Japan
www.GANZ.jp

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